

# Welcome, Organizations, Charge

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NLC Machine Advisory Committee  
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# HEPAP Subpanel on the Linear Collider

*3) We recommend that the highest priority of the U.S. program be a high-energy, high-luminosity, electron-positron linear collider, wherever it is built in the world. This facility is the next major step in the field and should be designed, built and operated as a fully international effort.*

*We also recommend that the U.S. take a leadership position in forming the international collaboration needed to develop a final design, build and operate this machine. The U.S. participation should be undertaken as a partnership between DOE and NSF, with the full involvement of the entire particle physics community. We urge the immediate creation of a steering group to coordinate all U.S. efforts toward a linear collider.*

*4) We recommend that the U.S. prepare to bid to host the linear collider, in a facility that is international from the inception, with a broad mandate in fundamental physics research and accelerator development. We believe that the intellectual, educational, and societal benefits make this a wise investment of our nation's resources.*

*We envision financing the linear collider through a combination of international partnership, use of existing resources, and incremental project support. If it is built in the U.S., the linear collider should be sited to take full advantage of the resources and infrastructure available at SLAC and Fermilab.*

# Linear Collider Activities

- US Organization
  - Accelerator R&D
  - Physics and Detector Studies
  - International Partnerships
  - Communication
- International Organization

# US Linear Collider Steering Group

## Draft Charter

The U.S. Linear Collider Steering Group leads universities and national laboratories working toward U.S. participation in an international high-energy, high-luminosity, electron-positron linear collider. The establishment of such a body was recommended by the HEPAP Subpanel on Long Range Planning.

While the functions of the Steering Group are expected to evolve with time, the initial U.S. Linear Collider Steering Group will:

- Prepare, communicate, and begin to implement a road map for defining, internationalizing, funding, and carrying out a linear collider project;
- Work with potential high-energy physics international partners and with governmental agencies, including equivalent groups in other regions of the world and the International Linear Collider Steering Group, to define a linear collider project;

## Draft Charter continued

- Provide an evaluation of options for building the linear collider involving factors such as scientific requirements, technical feasibility, risk, cost, initial facility parameters, upgradability of alternate technologies, and the implications of different sites;
- Prepare the elements of a U.S. bid to host the linear collider;
- Coordinate and propose U.S. accelerator research and development for a linear collider; and
- Coordinate and propose U.S. research and development on physics and detectors for experiments to be carried out at a linear collider.

# US LCSG Organization & Membership

- Executive committee plus four subcommittees
  - Accelerator
  - Physics and Detectors
  - International Partnerships
  - Communication (working with HEP Communication Committee)
- Membership of Executive Committee
  - Directors of Cornell, Fermilab, and SLAC: Maury Tigner, Mike Witherell, and Jonathan Dorfan (chair)
  - American Linear Collider Physics Group leadership: Jim Brau and Mark Oreglia
  - Accelerator leadership: Dave Burke, Steve Holmes, Gerry Dugan
  - About five physicists from universities and other laboratories; including contact with DPF and DPB
- Terms
  - Executive Committee: three years, staggered
  - Chair: two years
  - Structure: review after three years

# American Linear Collider Physics Group

- Leaders: Jim Brau and Mark Oreglia
- Executive committee: Ed Blucher, Dave Gerdes, Lawrence Gibbons, Dean Karlen, Young-Kee Kim, Hitoshi Murayama, Jeff Richman, Rick Van Kooten

- Working group leaders:

Simulations: Graf, Peskin

Vertex Detector: Brau, Roe

Tracking: Schumm, Karlen, Riles

Particle I.D.: Wilson

Calorimetry: Frey, Turcot, Chakraborty

Muon Detector: Fisk

Data Acquisition, Magnet, and Infrastructure: Interaction Regions, Backgrounds: Markiewicz

Beamline Instrumentation: Woods, Torrence, Cinabro

Higgs: Van Kooten, Haber, Carena

SUSY: Nauenberg, Paige, Feng

Other New Particles and Alternative Theories: Hewett, Tkaczyk

Radiative Corrections (Loopverein): Baur, Wackeroth, Dawson

Top Physics, QCD, and Two Photon: Orr, Gerdes

Precision Electroweak: Marciano, (to be named)

gamma-gamma, e-gamma Options: Gronberg, Velasco e-e-: Heusch

# Charge for LC Physics Group

- The American Linear Collider Physics Group has been created to establish and manage a process that leads to a forefront experimental program at a high-energy electron-positron linear collider (LC). To be successful, this process must demonstrate that such a physics program can, with a high level of confidence, be carried out within a reasonable time frame and within a reasonable budget. Given the strong international interest in this physics, the ALCPG's role should be understood as the North American part of a larger global effort. The ALCPG should maintain strong ties to other groups with similar goals around the world.



# International Steering Group

- ICFA named a Working Group to discuss the charge and membership of an International Linear Collider Steering Group. The Working Group members are:
  - Europe: Foster, Maiani, Wagner
  - Japan: Sugawara and ACFA chair
  - U.S.: Dorfan, Gilman, Tigner, Witherell
- We are to present results for approval by ICFA.
- The goal is to have a first meeting at Amsterdam.
- ICFA also chartered an international Technical Review Committee.
  - Nan Phinney will discuss.

# HEP Communication and Outreach Group

- Initial Group Members

Jonathan Bagger (co-chair)

Barry Barish (co-chair)

Neil Calder

Sally Dawson

Persis Drell

Fred Gilman

Paul Grannis

Judy Jackson

Larry Krauss

Mel Shochet

Jim Siegrist

Herman White

# Tevatron luminosity

- It is not the topic of this meeting, but it is the primary topic of all our other reviews.
- It is important to the field.
- I should summarize the status **briefly**.

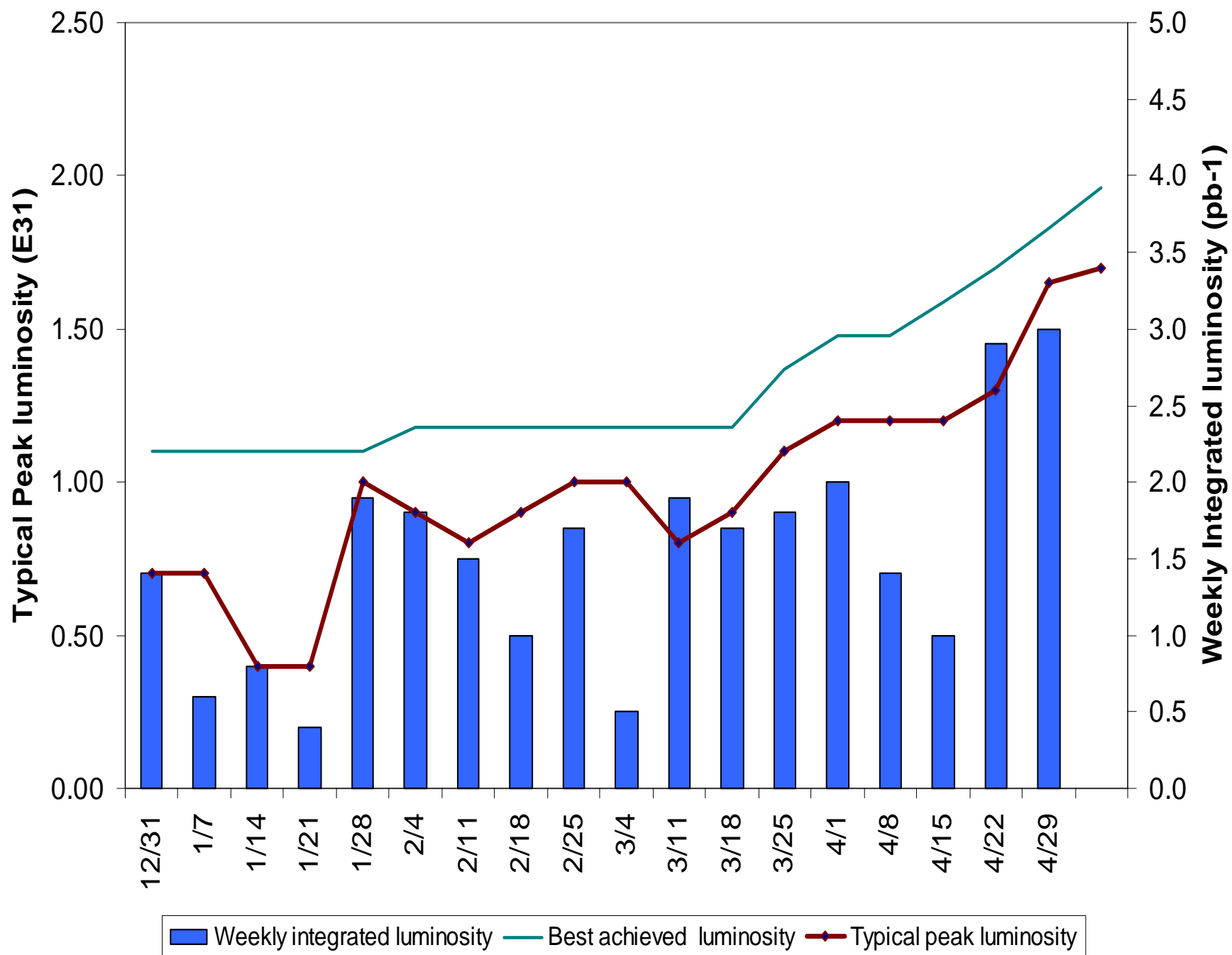
# Run IIa Luminosity Goals

- **Run IIa** refers to operations supported by the collider configuration envisioned during the Main Injector construction.
  - Luminosity:
    - $5 \times 10^{31}$  (Main Injector Project baseline)
    - $8 \times 10^{31}$  (renormalized when we exceeded our Run I goal by 60%)
    - $2 \times 10^{32}$  (Recycler Ring incorporated into the Main Injector Project)
  - Integrated luminosity:  $2 \text{ fb}^{-1}$  over a 2-3 year period

**The Collider Run II is the most important activity at Fermilab.**

# Run II Luminosity

- The Tevatron physics program is the best opportunity for discovery we have in particle physics right now.
- The collider performance in early Run II has been disappointing.
- We are in the middle of organizing for a sustained campaign to improve luminosity.
  - After months of focused effort, many problems were identified and understood. Some solutions implemented, others with time.
  - In the last few weeks, we are starting to see the benefits of these solutions.
  - We are committed to a long campaign.
- We are starting to achieve success with integration of laboratory resources outside the Beams Division
  - From the other Divisions at Fermilab
  - From other laboratories



# Charge

Review the NLC R&D plan in light of the President's FY03 budget request.

- The President's FY03 budget for NLC R&D is the same as FY02, which is well below that needed to do the work that should be done.
- The NLC collaboration will present a plan for getting the most urgent work done within the guidance given.
- We assume some growth in budget in FY 04.
- Are the priorities correct?